

Imaginative Networks: Tracing Connections Among Early Modern Book Dedications

John R. Ladd

John R. Ladd. Northwestern University. jrladd@northwestern.edu.

Peer-Reviewers: Natalie Houston, Lindsey Eckert

Dataverse DOI: 10.7910/DVN/661FJF

ABSTRACT

This essay uses network metrics (centrality, density, clustering coefficients) to account for shifts in dedicatory practice resulting from political crises, religious turmoil, and changes in book production practices. It constructs a network from the names that appear in dedications of EEBO-TCP texts; names are detected using the linguistic markup from the EarlyPrint project. The essay argues that we learn more about early modern book history by constructing networks of all the names that appear in dedications, not just those of authors, printers, and patrons. The network includes a mixture of religious and political figures, literary personalities, fictional characters, and bookmaking professionals, because this is the full range of names that dedicatory practice covers in the period. By proceeding in this way, network metrics can account for a range of dedicatory phenomena, including Queen Elizabeth's popularity on both sides of the political aisle long after her death and, especially, consolidation around non-contemporary names in dedicatory practice as a result of both the Civil War and the Restoration. The imaginative networks revealed by early modern dedications are organized mainly around untimely figures from the recent and distant past, but despite this the networks are sensitive to historical change, especially at moments of political and social crisis.

In *A Description of the Famous Kingdome of Macaria* (1641), Samuel Hartlib begins his book with a dedication to the “High and Honorable Court of Parliament,” but in the text of the dedication he saw fit to name a few people who have little do with the Parliament of the early 1640s:

TO THE HIGH AND HONORABLE COURT OF PARLIAMENT

WHereas I am confident, that this Honorable Court will lay the Corner Stone of the worlds happinesse before the final recesses thereof, I have adventured to cast in my widowes mite into the Tresurie, not as an Instructor, or Counsellour, to this Honourable Assembly, but have delivered my conceptions in a Fiction, as a more manerly way, having for my pattern Sir *Thomas Moore*, and Sir *Fran-*

cis Bacon once Lord Chancellour of England; and humbly desire that this honourable Assembly will be pleased to make use of any thing therein contained, if it may stand within their pleasures, and to laugh at the rest, as a solace to my minde, being enclined to doe good to the publick. So humbly craving leave, that I may take my leave, I rest this 25. of October 1641.¹

This dedication follows the conventional form by including an elaborate header that addresses the dedicatee, in this case Parliament. But Hartlib names two other individuals, More and Bacon, in the body of the dedication, and he even labels them as his “pattern” or role models in this publishing venture.

Neither More (who died in 1535) nor Bacon (who died in 1626) would show up in a network graph focused on reconstituting the lived early modern social world of 1641, nonetheless Hartlib mentions each of them at the book’s opening. Since he is putting forth a new utopian text, it makes sense that Hartlib would want to cite these two men as his “pattern,” making this a reference to both the authors and their books simultaneously. Hartlib uses his dedication to address his dedicatee but also to stake out some authorial territory by invoking his key influences. In this essay, I take advantage of the additional names that authors added to their dedications to create an expanded network of print relationships that includes contemporary social bonds alongside historical—and even fictional—associations. These networks show that (1) naming in dedicatory practice is driven as much by *untimely* references to political and religious figures as by contemporary authors and patrons, and (2) these references, citations, and addresses through naming are responsive to political and social change, e.g. when the mid-seventeenth-century political crises arrive, dedicatory naming shifts markedly toward untimely references. As a further illustration, Hartlib’s reference to his influences is far from the only kind of naming that takes place in early modern dedications. Samuel Drake’s dedication of his sermon *Totum Hominis* to Margaret Armitage also includes a number of additional names that belong to neither the author nor the dedicatee.

TO THE TRULY VERTUOUS AND *RELIGIOUS* LADY, THE
LADY MARGARET ARMITAGE, Wife to Sir *JOHN ARMITAGE*
of *Kirklees*, Baronet. . . .

In my Prayers I may not forget your Two vertuous Daughters, may
Madam *Margaret*, and Madam *Catharine* deserve the stile of *Jemima*
and *Kesia* (two of Holy *Jobs* Daughters) for the Light of Divine
Truth in them, and the Perfume of Godliness. . . .

And, if you will be so just to your own self, as to Peruse, and still
Practise Gods Holy Precepts; so Merciful to Me, as to Pardon this
Presumption, you Crown the Hopes and Desires of MADAM, Your
Most Humbly Devoted Servant, *S.D.*²

Armitage's husband, John, is included in the header, but more importantly Drake includes his dedicatee's two daughters, Margaret and Catherine, holding them up as examples of piety. Margaret and her daughters are each associated with the content of Drake's sermon, as exemplars of the virtues (justice, mercy, and humility) on which he preaches. Drake takes this a step farther when he insists that Margaret and Catherine "deserve the stile of Jemima and Kesia, (two of Holy Jobs Daughters)." In addition to the contemporary figures that are invoked here, Drake associates Armitage's daughters with biblical figures, further incorporating them into the subject of his sermon and demonstrating his knowledge of scripture. For Drake, as for many writers of dedications, the contemporary and the biblical exist side-by-side.

The habit of naming non-contemporary figures alongside living ones is repeated in the texts of many early modern dedications: some of the individuals mentioned are living, some have died recently, others are writers, influences, and religious figures from another time entirely. The imaginative network of a text involves all of these figures together, and by considering them in a single network, I use network metrics—density, degree, strength, betweenness—to better understand the interlocking motivations that underlie text creation, including patronage, social and cultural aspiration, anxieties of influence, and social

relationships. More specifically, by including names from the dedication body rather than just its heading, this study's networks show that early modern dedicatory practice is not mainly organized around present-day figures, as it is usually described. Instead the networks are tied together by a range of figures from the recent and distant past. And though these imaginative networks are not focused on contemporary figures, they are nonetheless responsive to contemporary politics. Shifts in network structure and centrality measures from the 1630s through the 1660s account for changes in dedicatory practice that arise from the political crises of that period: the replacement of the monarchy with a republic followed by the Protectorate, the exile of large portions of the English nobility, sudden shifts in censorship laws and printing regulations, and ever-changing political and religious discourses. Rather than flattening the effects of political and social change on dedicatory practice, the untimeliness of naming in dedicatory networks alerts us to key moments of discursive shift amid political change.

Paratext, Dedications, and Naming Practices

The two examples above emphasize the untimeliness of the print networks I've reconstructed: just as the landscape of reading is made up of recently published texts and texts that first appeared long before, the landscape of print is made up of actors who are not physically present in the social world but are nonetheless crucial to understanding how the relation between persons and texts was constructed. The relationship between an author or text and a name mentioned in a dedication is an imaginative relation. When an author does not personally know the individual they are invoking in a dedication, or even when they do, the appearance of that name stakes out an intellectual and imaginative space for the *idea* of that person which could, but need not necessarily, fall back on any first-hand relationship with the individual. These imaginative relations abound during the creation of a text—we all carry the ideas of many people we may not currently know: public figures, deceased relatives, people we would like to meet. A dedication is one place where these imaginative relations can take form through naming, direct reference, and allusion. By recovering these rela-

tions as networks, it is possible to both visualize and quantify the striking degree to which non-contemporary names play a key role in early modern dedicatory practice, overshadowing the role of contemporary patronage. Furthermore, during times of political and social upheaval, dedicatory mentions of figures from the distant past change radically, along with changes in patronage, censorship, and other social and economic shifts that underlie early modern bookmaking.

My study of dedications comes at a moment of renewed interest in paratexts for both book historians and digital humanities scholars. Rather than being viewed as ancillary to the main text, paratextual material such as prefaces, tables of contents, indices, footnotes, and addresses to the reader have been studied as literary objects in their own right.³ Book historians over the past twenty years have drawn on paratexts to deepen our understanding of early modern printing and reading practices, showing that paratexts perform functions often central to the exchange between author and reader.⁴ And with the availability of EEBO-TCP and other digital resources coming at the same moment as this critical resurgence of paratext, opportunities for digital paratextual study abound.⁵

In my work I often use network analysis to explore the ways in which social relations and collaborative writing practices shape literary forms and genres. I turn to paratext as a site of early modern relational thinking, combining my interest in abstract social networks with an attention to material texts. Many network projects that attempt to understand the world of early modern print use forms of metadata—information extrinsic to the text itself like titles, subject headings, and publication information—rather than the contents of the text or any part of the text. In “Metadata, Surveillance, and the Tudor State,” Ruth and Sebastian Ahnert’s network analysis of metadata from Tudor State Papers, the authors argue that “surprisingly deep insights can be gleaned from metadata by applying a range of easily available network analysis algorithms to a body of metadata.”⁶ In fact, as the Ahnerts show, metadata has often been deployed by governments, from the Tudor era to the present day, to surveil and abuse their citizens.⁷ Metadata is a potentially powerful source of information, especially when used as the basis for a network, and it must be handled carefully. But

thanks to the efforts of the Ahnerts and others, there is a robust recent history of responsible uses of early modern metadata in network visualization and analysis projects.

In fact there are so many examples I am unlikely to have cataloged them all. The *Shakeosphere* project is made from metadata: the information in the English Short Title Catalog.⁸ Another network project, *Six Degrees of Francis Bacon*, is derived from the metacommentary on social relationships available in the secondary sources of the Oxford Dictionary of National Biography—not quite a source of metadata per se, but a method that similarly deploys information *about* information.⁹ Even projects that derive their networks from EEBO-TCP texts directly, as I do, make use of metadata in various forms. Maciej Eder¹⁰'s study of style variation in early modern Latin relies on metadata to label and categorize its networks' texts even as its connections are drawn from text analysis.¹¹ Michael Gavin¹²'s *Historical Text Networks* are made from a combination of EEBO-TCP metadata (specifically imprint information) and additional information from paratexts. And paratext is precisely where my study intersects with concerns about metadata.

Paratexts occupy a liminal position between data and metadata. As part of the primary source, they can be considered data itself, but for the ways they comment on and relate to the main text, they are also a form of metadata. My project takes a specific paratextual form, the dedication, as its main source of (meta)data, leveraging its complex relationship to the text as a source of network information. By locating paratexts as a source of metadata, I do not intend to reinstitute the notion that paratext is only interesting insofar as it can tell us something about the main text. On the contrary, I hope to show that the liminal status of paratexts allows them to make meaning independent of the “main” text and that these meanings, taken in the aggregate, can productively complement our understanding of the networks of composition and book production.

Given this background on the scholarship of paratext, it seems reasonable to assume that the best imaginative network of a text might include names from many

different kinds of paratexts: prefaces, tables of contents, subscription lists, etc. However I have chosen to focus on dedications because of their unique position among paratexts and their distinctive relationship to the texts they accompany. Going back to Genette's initial taxonomy of paratext, scholars have recognized that dedicatory epistles have a "direct (economic) social function" with respect to a patron or dedicatee, but that because they are textually expanded beyond the mention of a single individual, they can include many other messages, including "information about the sources of the work, or comments on the work's form or meaning."¹³ Genette acknowledges that while this function may seem to overlap with the function of prefaces and introductions, these additional messages are an "inevitable" part of dedications. He uses examples such as Corneille's *Cinna* and *Pompee* to show that authors "want to justify the choice of dedicatee by a statement relative to the work."¹⁴ This is the same phenomenon I showed in the above examples from Hartlib's *Macaria* and Drake's *Totum Hominis*. Following Genette, I maintain that unlike prefaces or other paratexts that comment on a work, dedications comment on a work with a specific eye toward the social, economic, and political associations surrounding that work's publication. Because of the dedication's unique role in justifying the work's existence within a social sphere, the names mentioned within it are particularly relevant to our understanding of the social networks of print culture, as well as an especially good part of the text in which to examine the political effects that I take up in this essay.

Previous studies of dedicatory relations have implicitly acknowledged this distinctive social aspect of dedications. Dustin H. Griffin¹⁵'s study of patronage and Michael Gavin¹⁶'s study of criticism, though they focus primarily on dedicators and dedicatees, see the dedication as a locus for social information about a text because it holds a specific—though expansive—social function. Though I could have collected names from different kinds of paratexts, such as subscriber lists or prefaces, the dedication is a particularly rich site for the combination of immediate social realities with the author's commentary on the work. And by extending my scope to all of the names that appear in dedications, I show how

dedicatory relations remain engaged with political and social events while not being tied to contemporary figures alone. This is why the imaginative networks of dedications are informative: they highlight a broad, trans-historical set of relations among books that nonetheless remains sensitive to social change.

Even within dedications alone, naming practices vary widely. Some of the nuances of the names are tied to the part of the dedication in which they appear. In the header, where the dedicatee is addressed, names are highly formalized, often with multiple titles for each individual. In the signature, if the author chooses to include their name, it is often in an abbreviated or initialized form, even if the author's full name appears on the title page or elsewhere in the book. Both dedicator and dedicatee names can appear in the body of the dedicatory epistle, but usually in a simplified form. I have kept track of where particular names appear in dedications in order to account for this nuance. And when possible I have disambiguated names, so that a mention of "Robert, Third Earl of Essex" in a header is recognized as the same person as "Robert Devereux" mentioned in the same dedication's body text.¹⁷ Knowing where a name appears in a dedication is a crucial clue to the relationship of that person to the book (particularly it can tell us whether the name refers to an author or dedicatee), and retaining this information allows for selecting subsets of nodes to compare networks of dedicatees and authors alone to those with all possible names. I do this, below, to highlight how the inclusion of names from the dedication body changes the network.

But differences in naming practices aren't limited to these larger name categories. One-word names for well-known figures are common, and there's little question about the referent of "Aquinas" or "Wycliffe." But references simply to "John," though usually naming the evangelist, are more difficult to disambiguate (more on this in the section below on data collection). And some references to people, like a mention of "Virgil," may actually refer to a text or set of texts, as a kind of citation. The "people" whose names I detect are not the people themselves but textual traces, sometimes associated with a specific text. The computational method for detecting names, outlined below, cannot differ-

entiate a purely citational mention of Virgil from a more complex invocation of the man: though we should treat the notion that there is a clear distinction between these two categories with poststructuralist caution. In fact in these networks I am never dealing with actual persons but always with textual proxies for those people. Ultimately this is a project that deploys textual evidence to take seriously the complex relation between people and texts, and the varied naming practices in dedications is a crucial, specialized vector for this relationship.

Textual Evidence and Data Collection

The data for this project comes from *EarlyPrint*, the digital project on which I'm currently a collaborator. *EarlyPrint* extends the Early English Books Online–Text Creation Partnership (EEBO-TCP) markup of a book's features with linguistic markup that makes natural language processing (NLP) tasks easier and invites widely varied forms of analysis using the improved texts as a base. I used the “dedication” type attribute—added by EEBO-TCP at the earliest stages of markup—to locate the sections of the text from which I drew names. The *EarlyPrint* corpus contains linguistic markup for 52,149 of the 60,331 texts in the full EEBO-TCP corpus. The remaining texts are written in languages other than English or consist largely of tables and figures that are more difficult to annotate. Work at *EarlyPrint* is currently underway to annotate the approximately 8,000 remaining texts, but this relatively small number of texts, if they have dedications at all, are unlikely to change the overall arc of the findings in this project. I collected data from the text sections marked up as dedications in the 52,418 *EarlyPrint* texts (see tbl. 1 for more details).¹⁸

From here the traditional approach would be to run named-entity recognition over the texts to detect personal names. But because contemporary NER tools are designed for modern language corpora, they are unreliable for highly variable early modern texts. Irregular orthography, non-standardized capitalization, initialism, pseudonymy, and anonymity all present distinct early modern challenges to computer-assisted name recognition. For example, the default English

model for Python NLP library spaCy, *en_web_core_sm*, has a precision score of 85.43% and a recall score of 85.72% when run on modern English text.¹⁹ However, even after training the model on early modern examples, I struggled to get precision or recall above 70%. In some cases the model also struggled to identify proper nouns.

The *EarlyPrint* XML provided a different way forward. In fig. 1 you can see the same names from Hartlib's *Macaria* that I showed in the quote above, with the word-level markup that *EarlyPrint* added to EEBO-TCP texts. This markup provides lemma, part of speech, and regularized spellings for every word in a text. The linguistic markup was provided by *MorphAdorner*, a Java NLP library developed by Philip Burns and Martin Mueller specifically for historical texts, with extensive training data and specialized code for early modern English.²⁰ *MorphAdorner*'s part of speech tagging allowed me to collect proper nouns more accurately. From there I used custom rules to eliminate proper nouns that were not personal names and to capture parts of names that were not tagged as proper nouns. In a review of 100 texts, this method achieved 82.74% precision and 94.84% recall, results comparable to spaCy's performance on modern English text.²¹

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<pc xml:id="A45750-003-a-0130">,</pc>
<w lemma="have" pos="vvg" xml:id="A45750-003-a-0140">having</w>
<w lemma="for" pos="acp" xml:id="A45750-003-a-0150">for</w>
<w lemma="my" pos="po" xml:id="A45750-003-a-0160">my</w>
<w lemma="pattern" pos="n1" xml:id="A45750-003-a-0170">pattern</w>
<w lemma="sir" pos="n1" xml:id="A45750-003-a-0180">Sir</w>
<hi xml:id="A45750e-120">
  <w lemma="Thomas" pos="nn1" xml:id="A45750-003-a-0190">Thomas</w>
  <w lemma="Moor" pos="nn1" reg="Moor" xml:id="A45750-003-a-0200">Moore</w>
  <pc xml:id="A45750-003-a-0210">,</pc>
</hi>
<w lemma="and" pos="cc" xml:id="A45750-003-a-0220">and</w>
<w lemma="sir" pos="n1" xml:id="A45750-003-a-0230">Sir</w>
<hi xml:id="A45750e-130">
  <w lemma="Francis" pos="nn1" xml:id="A45750-003-a-0240">Francis</w>
  <w lemma="Bacon" pos="nn1" xml:id="A45750-003-a-0250">Bacon</w>
</hi>
<w lemma="once" pos="acp" xml:id="A45750-003-a-0260">once</w>
<w lemma="lord" pos="n1" xml:id="A45750-003-a-0270">Lord</w>
<w lemma="chancellor" pos="n1" reg="chancellor" xml:id="A45750-003-a-0280">Chancellour</w>
<w lemma="of" pos="acp" xml:id="A45750-003-a-0290">of</w>
<hi xml:id="A45750e-140">
  <w lemma="England" pos="nn1" xml:id="A45750-003-a-0300">England</w>
<pc xml:id="A45750-003-a-0310">,</pc>
</hi>

```

Figure 1: A sample of *EarlyPrint* XML from the dedication to *Macaria*, with the same two names highlighted, as in the page image above.

While collecting names, I used other parts of the dedication markup to categorize them. I kept track of where the name appeared: whether in the header, indicating it was probably the name of the dedicatee; in the signature, indicating it was the name of the author; or in the dedication body, indicating it could be the name of either author, dedicatee, or some other kind of person. I also matched names against a text’s metadata, to identify the name of the author no matter where it appeared in the dedication. As I will show in the next section, these categories are useful for understanding how including names from the dedication body entirely changes the network. Here is a summary of the data broken down by decade and by type of name identified:

Table 1: Counts of texts and names by decade, from the texts in the EarlyPrint corpus. The 52,077 total is a result of the different ways that EEBO-TCP and EarlyPrint divide a small number of texts into individual files. The “Dedications” column indicates the number of texts that have at least one dedication (a few texts have more than one). The “Author,” “Header,” and “Body” indicate the number of names in each category that appear in that decade’s dedications.

Decade	Total Texts	Dedications	Author	Header	Body
1470-1479	17	1	0	0	6
1480-1489	37	1	0	3	12
1490-1499	48	1	0	0	14
1500-1509	66	0	0	0	0
1510-1519	64	0	0	0	0
1520-1529	84	7	2	12	35
1530-1539	240	22	3	32	202
1540-1549	387	80	17	139	487
1550-1559	371	90	28	161	525
1560-1569	451	140	29	250	1366
1570-1579	609	298	80	472	2009
1580-1589	855	462	139	662	2519
1590-1599	1046	539	157	755	2591
1600-1609	1518	763	221	1014	3530
1610-1619	1639	910	273	1271	3405
1620-1629	1998	843	236	1314	3332

Decade	Total Texts	Dedications	Author	Header	Body
1630-1639	1773	769	204	1221	3099
1640-1649	9355	1204	303	1180	3374
1650-1659	5909	1444	377	1717	5019
1660-1669	4980	960	294	1069	3922
1670-1679	4674	894	262	1133	3124
1680-1689	8168	1195	365	1538	4510
1690-1699	6797	1214	309	1520	4331
1700-1709	936	149	48	218	522
No date listed	55	5	1	8	165
Total	52077	11991	3348	15689	48099

The names summarized above were cleaned and disambiguated by hand using OpenRefine. While doing this, I was also able to eliminate additional false positives where my script misidentified a place name or other word as a personal name. Some ambiguities remain. For example, it is impossible to know whether references to “King Charles” refer to Charles I, Charles II, or a Charles of another nation. Some assumptions may be made before the accession of Charles II in 1660, but especially after that date, given that I will show how frequently names of dead public figures are mentioned, it is dangerous to assume that any mention of Charles is automatically of the living king. In these cases I have done my best to aggregate names as much as possible while remaining sensitive to possible ambiguities.

I assembled the resulting names into a bipartite, or bimodal, network—a network with two node classes where nodes of one class can connect only to nodes of the opposite class. In this case the two node classes are names of people and the texts in which those names appear. As Gavin²² does, I could have represented texts as edges and left only one kind of node: people. However, the bipartite representation allows me to consider relations among both texts and people. This allows me to show how dedicatory practices shape both the

groups of *names* mentioned and their relationships to one another, as well as how it both drives and reflects relationships among *texts* within early modern print culture. Which is to say, modeling the data as a bipartite network allows me to focus on the print relations intrinsic to this network rather than abstract those relations to a set of relationships among people alone.

Results

Untimeliness and Dedicatory Mentions

The resulting full network, covering texts from the full EEBO-TCP range of 1473 to 1700, has 54,679 nodes and 113,862 edges. Of those nodes, 42,687 are unique names and 11,992 are texts with dedications in which those names appear. As I mentioned above, a major takeaway from this study is that these ~40,000 names are not only the names of contemporary figures but the names of people from the recent and distant past, as well as fictional or legendary figures. And further, the *untimely* names of historical figures account for far more connections in the network than present-day individuals. Past studies of dedications at scale have focused on names of contemporary dedicators and dedicatees alone, but these data will show that, from a network analysis perspective, the most prominent names in the network refer to figures not living at the time of publication.

This phenomenon is easiest to see when looking a discrete subset of the network—a subgraph—for a specific period in time. Here I use the example of 1660, which is also a crucial year for understanding how these networks change over time, which I will cover in the next section. The 1660 network has 1,496 nodes and 1,972 edges. Of the nodes, 225 are texts and 1,271 are names. Below is a bipartite layout of the 1660 subgraph, with blue nodes on top representing people and orange nodes on the bottom representing texts. Nodes are ordered left to right by their degree, and sized by degree centrality (fig. 2). To see individual names more clearly, fig. 3 shows a subdivision of the above with only the top

ten names and the top 50 texts.

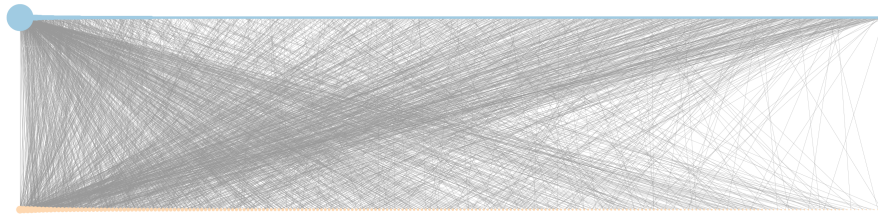


Figure 2: Bipartite layout of 1660 subgraph

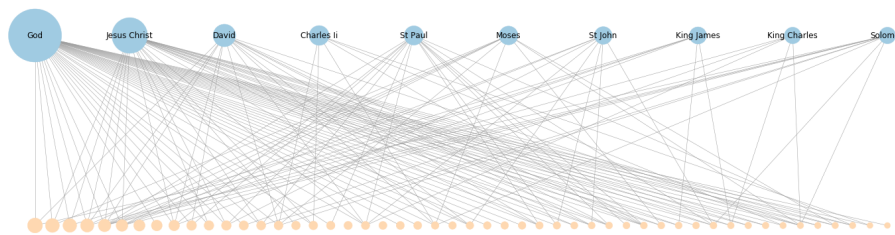


Figure 3: Bipartite layout of 1660 subgraph with top 10 names and top 50 texts.

To quickly get a sense of which names are most important in the network, we can rank them by a few basic centrality measures. In tbl. 2, I show the top twenty names ranked by degree (or number of connections), which in this network corresponds to the number of texts in which each name appears. I also show strength (or weighted degree), which corresponds to the number of times each name is mentioned, and bipartite degree centrality, the degree normalized by the number of names in the network.

Table 2: Top 20 Names in 1660 by Degree

Node ID	Name	Degree	Strength	Degree Centrality
126033	God	144	712	0.64
104495	Jesus Christ	65	225	0.289
111734	David	26	57	0.116
101427	Charles II	20	21	0.089
108610	St Paul	19	22	0.084
133188	Moses	18	27	0.08
110832	St John	16	17	0.071

Node ID	Name	Degree	Strength	Degree Centrality
105361	King James	15	19	0.067
140498	King Charles	14	15	0.062
141874	Solomon	14	23	0.062
106647	Satan	13	16	0.058
115297	King Henry	12	13	0.053
112509	St Thomas	8	8	0.036
135589	Caesar	7	12	0.031
125390	Job	7	10	0.031
126796	Queen Elizabeth	7	7	0.031
106425	General Monck	7	7	0.031
110709	Abraham	6	8	0.027
135309	William Prynne	6	7	0.027
111645	St Peter	6	6	0.027

Of the names above, only a few clearly refer to contemporary figures—General Monck, William Prynne—and only one in the top ten is contemporary—Charles II.²³ The rest are names of saints, biblical and classical figures, and past monarchs. Importantly for the year of the Restoration of the monarchy, names of biblical kings David and Solomon appear prominently, and I will say more about this resonance in the next section. The other names, John, Paul, Christ, Satan, Caesar, Elizabeth, and God, are some of the most frequently named figures across the entire corpus. It should be noted that for seventeenth century religious thinkers, Christ and God are very much contemporary living figures, but we would nonetheless put them in a different category from, say, a currently reigning monarch. These highest-frequency, non-contemporary names also take up a disproportionate amount of the total edges in the network. This is most clear when we look at the network’s degree distribution for names (fig. 4).

A degree distribution shows the number of nodes that have certain degree values. We can see that the degree distribution for names follows a power law,

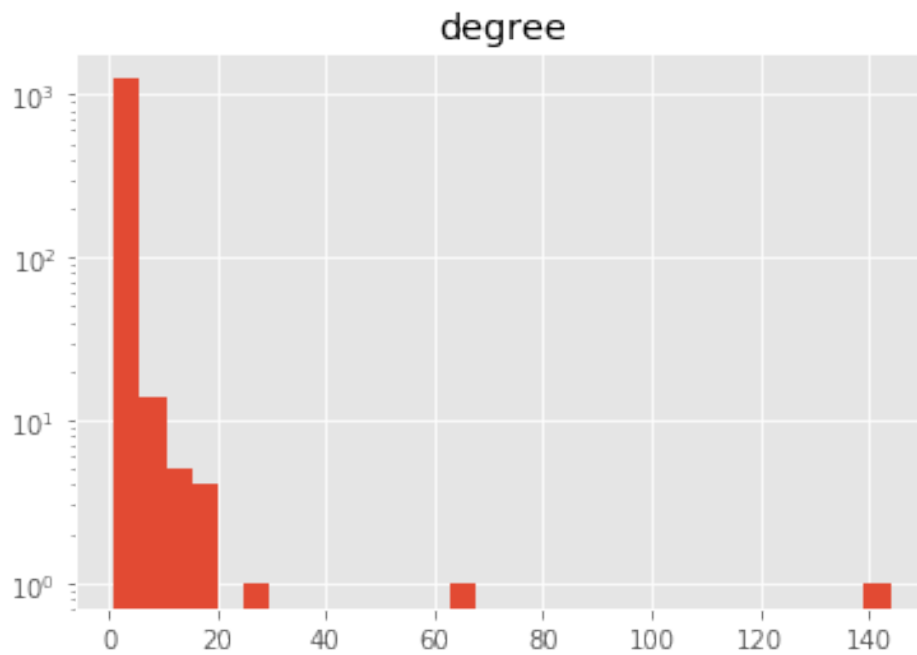


Figure 4: A histogram of degree distribution in the 1660 network, with y-axis on a log scale to account for a very steep drop-off in frequencies.

with only a few nodes of very high degree, and the vast majority of nodes with extremely low degree. This degree distribution is to be expected: it is very common among networks dealing with people and was mostly famously used to characterize the “small-world network.”²⁴ Not only are the most common names not from the present, but the frequent untimely names make up a much larger proportion of the network’s connections than contemporary names do. The degree distribution is also evidence that this graph exhibits *preferential attachment*, in which certain highly connected nodes tend to accrue more connections. And these highly connected nodes, the ones to which preferential attachment apply, are almost all names from the past.

Of the 1,496 names in the 1660 network, only 429 refer to currently living people, less than a third. And these 429 names only account for 523 of the 1,972 mentions recorded in the network as edges, barely over a quarter. That doesn’t mean that these names are insignificant or inconsequential. Not only does this list include the aforementioned Charles II, it also includes popular po-

litical and military figures like George Monck, authors like John Milton and John Selden, and early scientists like Robert Boyle. But these contemporary names, while important to the dedicatory networks of 1660, are far from the full picture. The majority of the names in the network are figures from the bible like David, Solomon, and Achitophel; names from classical antiquity such as Cato, Socrates, and Tiberius; and (relatively) recently-deceased political and religious figures including William Laud, Oliver Cromwell, and Queen Elizabeth.

To understand just how much these names from the past affect the network, I compare different ways of assembling the network using the parts of the printed dedication as a guide. By limiting the network to only those names which appear in the header or signature of the dedication, I can construct a subgraph that is much closer to a traditional picture of a dedicator/dedicatee graph. fig. 5 shows a visualization of that graph.

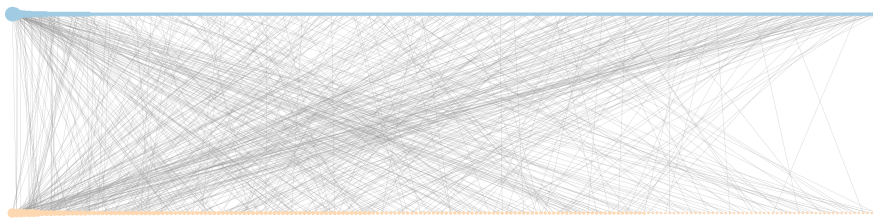


Figure 5: Bipartite layout of 1660 subgraph, showing only name mentions that appear in the header or signature of the dedication

In some respects this graph is similar to the full 1660 graph. For instance its density—the ratio of the number of edges to the number of all possible edges—is almost identical, approximately 0.006 for both graphs, which is about 0.002 more dense than random graphs of the same size.²⁵ Density tells us how connected a network is, how close it is to being a *complete graph*, one in which all possible edges exist. In this case, both graphs are slightly more dense than would be expected for random graphs of their size, but neither is that much more dense than the other, even though the graphs are different sizes. This graph is a good deal smaller than the full 1660 graph: it has only 553 edges and 647 nodes, and of those nodes 444 are names and 203 are texts. Notice that the 444 name count in this graph is quite close to the count of total contemporary names

in 1660: 429. And the difference is more apparent when you look at the top 20 names in this graph (tbl. 3).

Table 3: Top 20 Names in 1660 Graph of Only Names from Header/Signature

Node ID	Display Name	Degree	Strength	Degree Centrality
104495	Jesus Christ	19	107	0.094
101427	Charles II	17	18	0.084
126033	God	11	85	0.054
140498	King Charles	6	6	0.03
112509	St Thomas	6	6	0.03
135309	William Prynne	5	6	0.025
115297	King Henry	5	5	0.025
110832	St John	4	4	0.02
101782	Edward Reynolds	4	4	0.02
123321	Thomas Aleyne	4	4	0.02
118957	John Robinson	3	3	0.015
106863	William Towers	3	3	0.015
141705	J Gauden	3	3	0.015
135637	Thomas Hall	3	3	0.015
125505	Richard Baxter	3	3	0.015
135861	Richard Brown	3	3	0.015
105361	King James	3	3	0.015
106425	General Monck	3	3	0.015
113701	John Earnly	2	2	0.01
135252	William Paston	2	2	0.01

Some of the highest frequency non-contemporary names—Christ, God, Henry, St. John—still show up in this list, as expected. Limiting to the header and signature of a dedicatory epistle does not mean the network will only capture dedicators and dedicatees; sometimes names of neither appear in these sections. But the list has flipped from being almost entirely figures from the past, to al-

most entirely people from the present. Prynne, for example, moved far up the list, even though he's mentioned one fewer time when only counting mentions in the header or signature. Overall, this network gives us a much clearer sense of the present-day print networks, but it loses the texture of other references that are equally relevant to the ways authors are presenting their books. Both forms of the network are valuable, but having access to the many layers of non-contemporary naming highlights the extent to which early modern authors situated their books within networks that stretch far beyond the contemporary.²⁶

And we need not stop at categorizing the names as simply contemporary and non-contemporary. As I've already suggested, the names fit into many overlapping categories, particularly names of figures from the past: biblical names, classical figures, names of dead monarchs and politicians, dead authors and artists, etc. A detailed taxonomy of names is outside of the scope of this study but would likely be essential for any study that wishes to take up these methods for an analysis of names outside of dedications, in the full text. As an illustration of what such a taxonomy might do, and to demonstrate the significant amount of information added by searching for names in the body of the dedication (rather than just the header or signature), I have created and labeled six basic categories for names in the 1660 graph: living people (L), historical people (H), religious/biblical figures (R), fictional characters (F), and unknown/unclear (U). These categories are by necessity fuzzy and only intended to give a rough overview of the terrain of naming.²⁷ But by breaking down names in this way, it is easier to see the ways that names in the body of the dedication allow us to get a fuller picture of the untimeliness of dedicatory networks. First, tbl. 4 shows the number of names in each category and the average degree of those names.

Table 4: Count and Avg. Degree of Name Categories in 1660 Graph

Category	Total Count	Average Degree
F	50	1.420
H	202	1.515

Category	Total Count	Average Degree
L	666	1.240
R	216	2.898
U	137	1.044

Most of the names in the network are early modern, but only narrowly so. Both the historical and religious/biblical categories are quite large, and with average degrees larger than the “living” category—which here includes persons alive at any point during the early modern period, roughly 1500-1700. The average degree for the religious category is much larger, because of a few names (God, Jesus) with a disproportionately high number of mentions. And because the living category includes the names of anyone alive at any point in the early modern period (not just in 1660), some of the highest frequency names in this category are from the recent past: Martin Luther, Queen Elizabeth, and King James, to name a few. The next question to ask is where certain types of names are coming from: whether from the header of the dedication or its body (tbl. 5).

Table 5: Count for Name Categories and Section of Dedication in 1660 Graph

Category	Container	Total Count
F	body	49
F	header/signed	1
H	body	191
H	header/signed	11
L	body	259
L	header/signed	407
R	body	210
R	header/signed	6
U	body	118
U	header/signed	19

All but a handful of historical, religious, and fictional names appear only in the body of the dedication, as we might expect. Dedication body text is adding most of the information about relationships to the distant past, religion, or fictional abstractions, classes of relationships which add new valences to our understanding of dedicatory practice. Simply put, the dedication was a place where these influences and values were set out, alongside personal and economic relationships to living persons. But the body of the dedication also adds to our understanding of how contemporary or near-contemporary names are deployed.

More names of the living and recently deceased appear in the header or signature of the dedication, meaning that a little over two thirds of the names likely come from authors or patrons. But that leaves a sizable number in the living or recent category that only appear in the body. The body of the dedication adds lots of early modern names to the network, information about connection and association that wouldn't be available if we looked only at authors and patrons. The average degree of names in this category that appear in the header or signature of a dedication is 1.29, while the average for "living" names in the body is 1.16. These figures being so close to each other (and so close to one) indicates that neither authors and patrons nor other individuals are disproportionately driving this part of the network: names that appear purely in the body of the dedication are only slightly less frequently-mentioned on average. Authors and patrons are only telling part of the story of connection among texts.

Using these categories, we can easily construct a network that focuses exclusively on more immediate relationships, acknowledging that an author's relationship with God or with Cicero is different from a relationship to a living monarch or more contemporary writer. A visualization of the graph of names only from the "Living" category shows a network with fewer nodes and edges overall (fig. 6). The nodes have been rescaled by degree, but you can see a similar degree distribution to the other graphs. A few names received lots of mentions, and the rest just one or two. But the highest degree names in the graph are markedly changed. Without religious and historical figures, the highest-degree node is the newly restored monarch, Charles II. Previous monarchs (James,

Charles I, Elizabeth) and prolific authors (William Prynne, Thomas Aleyn) also make the top twenty, as does Martin Luther. Though this list emphasizes the prominence of living figures, like Charles II and General Monck, even when focused on “real” relationships the network remains less focused on timely names than one might expect. Even with the distant past taken out, the recent past has a strong hold on dedicatory relations.

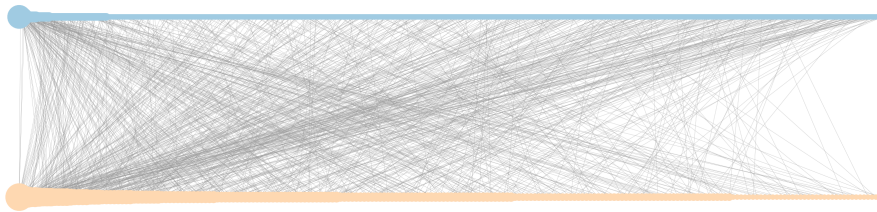


Figure 6: Bipartite layout of 1660 subgraph, showing only name mentions that are in the “L” category, meaning people who lived at any point in the early modern period, roughly 1500-1700.

There are other revealing ways of categorizing nodes and understanding their impact on dedications. Comparisons of node-level metrics, especially centrality measures, show how different kinds of names play different structural roles within the network. For example, the two lists above show both degree—the number of texts in which a name appears—and strength—the number of times a name appears. A ratio of these measures will show which names appear many times in just a few texts.²⁸

Table 6: Top 20 Names by Strength Over Degree in Full 1660 Network

Node ID	Display Name	Degree	Strength	Strength/Degree
108936	Celsus	1	10	10.0
119927	Juvenal	1	6	6.0
113792	Jeroboam	3	18	6.0
107255	Jansenius	1	5	5.0
104296	Ephraim	1	5	5.0
128960	Therammenes	1	5	5.0
105583	Brounrig	1	5	5.0
126033	God	144	712	4.944

Node ID	Display Name	Degree	Strength	Strength/Degree
117031	Critias	1	4	4.0
109028	Ambrose	2	8	4.0
117768	Jehoshaphat	1	4	4.0
127113	John Heydon	1	4	4.0
119399	Eve	1	4	4.0
104495	Jesus Christ	65	225	3.462
123518	Thomas White	1	3	3.0
116693	Henry Jeanes	1	3	3.0
117265	Orbis	1	3	3.0
101079	Avicen	1	3	3.0
135617	Suarez	2	6	3.0
111052	Camerwell	1	3	3.0

Unsurprisingly, there are a lot of names in this table that appear in just one text, but multiple times—a figure with whom a certain author may be preoccupied. But a few figures—Jeroboam, St. Ambrose—appear in multiple texts but still have high strength-to-degree ratios. These names, of biblical figures and saints, are the kind of people whose writings one might discuss at length or about whom one might tell a story, as opposed to a person for whom a single reference may be enough.

A different set of names can be discovered by examining ratios with betweenness centrality—a relative measure of the number of shortest paths that pass through a particular node in the network. Betweenness centrality, when combined with degree centrality, provides a way of seeing which nodes stand between sections or communities in the network without themselves having many connections. These “bridges” are crucial for network cohesion. tbl. 7 shows names with high betweenness centrality and low degree centrality.

Table 7: Top 20 Names By Betweenness Centrality over Degree Centrality in Full 1660 Network

Node ID	Display Name	Betweenness Centrality	Degree Centrality	Betweenness/Degree
132630	Maecenas	0.018	0.013	1.366
104552	Vespasian	0.009	0.009	0.96
126033	God	0.553	0.64	0.864
137792	Thomas Bodley	0.006	0.009	0.687
113701	John Earnly	0.006	0.009	0.687
132460	Plato	0.008	0.013	0.622
133382	Hippocrates	0.008	0.013	0.616
134423	St James	0.01	0.018	0.578
112509	St Thomas	0.02	0.036	0.558
112708	Galen	0.005	0.009	0.547
136855	Mercury	0.007	0.013	0.52
139182	Plutarch	0.007	0.013	0.494
112174	Alexander	0.013	0.027	0.492
114830	John Calvin	0.004	0.009	0.428
137206	Nilus	0.004	0.009	0.413
137942	Urania	0.004	0.009	0.413
105886	Democracy	0.004	0.009	0.413
104495	Jesus Christ	0.115	0.289	0.398
134567	Phaeton	0.005	0.013	0.357
108864	Mars	0.004	0.013	0.329

These names are much more political than the religious and biblical names from the strength-to-degree list. Maecenas, counselor to Augustus, is at the top, along with Roman emperor Vespasian. Medical thinkers Hippocrates and Galen also make the list.²⁹ The bridges in this network may be names that can be discussed differently depending on the context—an author on one end of the political spectrum, a Royalist, might invoke Maecenas as an example of how well monarchy functions, while a Republican might invoke Maecenas to make the opposite

point.

The 1660 example shows that non-contemporary names make up a vast, important part of the dedicatory networks, which in turn emphasizes that dedications are about a lot more than simply who the patron was. In addition to these names being important within the context of a specific year, by tracking the network over time we can see the way non-contemporary names are consistently deployed across the period. fig. 7 is a stacked time series of the most common names in the whole network, and their degree centrality over time in networks grouped by five-year spans. I use bipartite degree centrality rather than raw degree here because it is normalized to account for the different sizes of the five-year networks.

Except for the spikes caused by sparse data in the early part of the period, the relatively high degree centrality of these top nodes stays fairly consistent over time. The final name in this graph, King James, spikes in 1604 when James VI of Scotland takes the throne as James I of England. But after that, his pattern follows other popular names like Moses, Solomon and Augustine—James enters a rotation of popular names that authors use even though they are not contemporary figures.

The same phenomenon is apparent if we look at a time series for Elizabeth I (fig. 8). Variations on her name appear throughout the corpus, beginning as Princess Elizabeth before her reign and hitting a high point of degree centrality (0.08) in the 1580-85 graph. Significantly, Elizabeth's influence does not decrease as much after her death as one might imagine: in the decade immediately following her death, her degree centrality stays at about the same levels as it did in the final years of her reign. Afterward, it expectedly drops off somewhat, but crucially Elizabeth's influence in the network does not shrink to nothing. Her name seems to be invoked slightly more during periods of political transition: during the tumultuous final years of Charles I's reign, during the first years of the Restoration of Charles II, and in the run up to the Glorious Revolution of 1688. As a beloved political figure from the recent past, it seems that there is a



Figure 7: The ten nodes with the greatest overall degree centrality, tracked by degree centrality over time.



Figure 8: Degree centrality for Elizabeth I over time.

habit of invoking Elizabeth at moments of political uncertainty. Though these kinds of mentions aren't as frequent as the mentions of her name during her reign, they nonetheless speak to the ways that non-contemporary naming is an important mode of dedicatory mention, driven as much by political and social concerns as by economic ones. The social concerns of dedicatory practice and the economic ones are inextricably linked—tracking dedicatory mentions over time gives a better sense of the way these two drivers for dedicatory naming overlap.

Names from the distant past appear with more regularity across the corpus than contemporary figures almost as a rule. I see this as an important corrective to the practice of using dedications to tell us only about author-patron relations. It is now a commonplace in studies of reception to recognize that readers do not choose only from a crop of books newly published in a given era, but from a variety of books published before then. Reading practices are often backward-looking, and any one person's reading can include books published across a long span of time.³⁰ Likewise with dedicatory practice, while early modern books are almost always dedicated to a living person, the names that appear in dedications can include a range of influences, citations, and relations from across a very wide span. A dedication—whether written before or after the main text—works along with other paratexts to signal the reader to the book's wide imaginative network. The invocation of names in the dedication allows readers to situate a book and its author within a network of influences, citations, and

allusions, and that network is far broader than only contemporary figures.

However, these findings do not suggest a flattening effect, where the same names are repeated over and over without differentiation. Though some very common names don't vary much, there is quite a lot of variation over time even with non-contemporary names. A name like "Maecenas" or "King David" might suddenly surface in the network at a particular time for a particular reason. We see this with Elizabeth as well—though hers is a popular name to invoke, there are specific moments in which her name is used more often. In the next section I explore some of the political causes of this kind of change in dedicatory networks over time.

Political Crisis and Change Over Time

From the evidence above we can conclude that dedicatory networks are not bound by the relationships of the present day. On the contrary, one of the clearest features of these networks is the high centrality of names from the distant past. However it would be incorrect to extend that conclusion to say that the historical context of a dedication doesn't matter. Even though dedicators are invoking names from a wide swathe of history, they are doing so in response to the economic, social, and political concerns at the moment of publication. This is clear from Genette's initial observation of dedicatory epistles—that they contain a justification for the book with respect to the dedicatee, the imagined reader, and a broader societal context. Though the networks in this study show high centrality for names from the past, the deployment of contemporary and historical names alike is very responsive to immediate social and political concerns. As I will demonstrate in this section, the networks that span the 1630s through the 1660s show a series of changes in network structure and name use that track with the tumultuous political and social landscape of those decades. In response to civil war, multiple changes in government, and shifts in the regulation of print, dedication networks show shifts in name mention that respond to and comment on this period of political crisis.

I divided the network into five-year time spans, beginning in 1630 and ending in 1670. In testing I found this grouping to be more sensitive to changes over time than ten-year spans and without the artificial increases in degree for individual nodes caused by spans smaller than five years. To understand network size and structure over time, I calculated the number of nodes and edges in each graph, as well as the average degree for each node set, the number of components, bipartite density, and the average of the bipartite clustering coefficients.

Table 8: Graph-wide metrics for networks in five-year spans

Network	Nodes	Names	Texts	Edges	Components
1630-1634	3049	2642	407	3997	56
1635-1639	2546	2184	362	3268	58
1640-1644	3077	2493	584	4408	71
1645-1649	3334	2714	620	5059	51
1650-1654	4200	3543	657	6175	66
1655-1659	4932	4145	787	7726	77
1660-1664	4367	3708	659	6271	95
1665-1669	2237	1936	301	2656	69

Table 9: Graph-wide density and clustering for networks in five-year spans, with those metrics compared to average of random networks of the same size

Network	Density	Density vs. Average	Avg. Clustering Coefficient	Clustering vs. Average
1630-1634	0.004	0.001	0.562	0.011
1635-1639	0.004	0.001	0.567	0.019
1640-1644	0.003	0.001	0.471	0.056
1645-1649	0.003	0.001	0.448	0.058
1650-1654	0.003	0.001	0.486	0.024
1655-1659	0.002	0.001	0.465	0.047
1660-1664	0.003	0.001	0.5	0.036

Network	Density	Density vs. Average	Avg. Clustering Coefficient	Clustering vs. Average
1665-1669	0.005	0.001	0.621	0.022

In addition to the raw calculations in tbl. 8, I also included comparisons for density and average clustering coefficient against the average of five random graphs of the same size in tbl. 9. Because these metrics are dependent on network size, they can't be directly compared across graphs of different size. Instead it is preferable to compare the difference between the metric and the average of the same metrics from same-size random graphs, which is what I've done here. However, before I discuss density and clustering coefficients, I want to emphasize changes in network size over time.

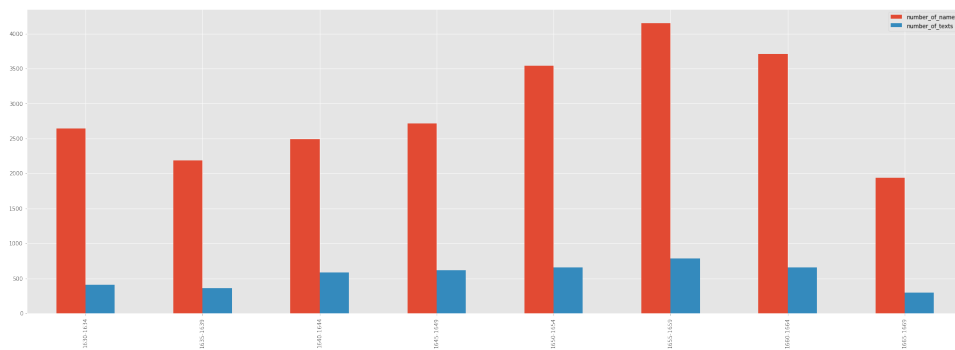


Figure 9: The number of names and texts in each five-year graph.

fig. 9 shows the number of names (in red) and the number of texts (in blue) in each graph. Notably the largest graphs are the 1650-54, 1655-59, and 1660-64 spans. This may come as a surprise to book historians, who might expect to see a spike in the number of texts in the 1640s. The early days of the Civil War and Republic period saw a number of sudden changes to printing regulation, which caused an explosion in the production of cheap print, especially political tracts and pamphlets.³¹ And the proportion of these texts may be overrepresented in the EEBO-TCP corpus, as a result of the Thomason Tracts, a collection of political pamphlets collected by George Thomason that make up a large part

of EEBO's corpus in the 1640s. However, there's no evident 1640s spike in this network. That is likely because most of the political pamphlets and other kinds of cheap print produced in the 1640s did not have dedications. Dedications tend to appear more often in longer, more expensively-produced volumes. This graph suggests that the number of texts with dedications stays relatively consistent across this forty-year period.

In addition to understanding the change in size of these networks over time, I use bipartite density and clustering coefficients to observe structural change in the networks. Bipartite density, as in a unipartite graph, is a ratio of the total edges in the graph to the number of all possible edges; it tells us how close the graph is to being complete. As you can observe in tbl. 9, all of these graphs are fairly sparse, but they are also of *expected* density when compared to random preferential attachment graphs. That is to say, these networks are about as dense as a typical graph with the same number of names and the same degree distribution. A bipartite clustering coefficient is a more local measure of density. In a unipartite network, it measures how often the neighbors of a node are connected to one another. In a bipartite network the measure is similar: it shows how often the second order neighbors of a node are connected to the same node. A clustering coefficient tells you how dense the immediate area around a single node is. Looking at the average clustering coefficient of a graph gives a sense of how closed a network's loops are and how closely related its nodes. In networks with lots of disconnected components, density will register as sparse even if some individual components are more dense; average clustering coefficient will register this local density. For both of these measures, we can chart how different each metric is from the expected average, over time.

As I've already suggested, compared to average networks, the density of these networks does not change much over time (fig. 10). They all have a fairly high number of components, and are therefore all relatively sparse. And again, this is typical in preferential attachment graphs—the densities are not far off from the average for their size. There may be a slight rise in density in the late 1630s and 1640s, but it's difficult to see from looking at density alone. However,

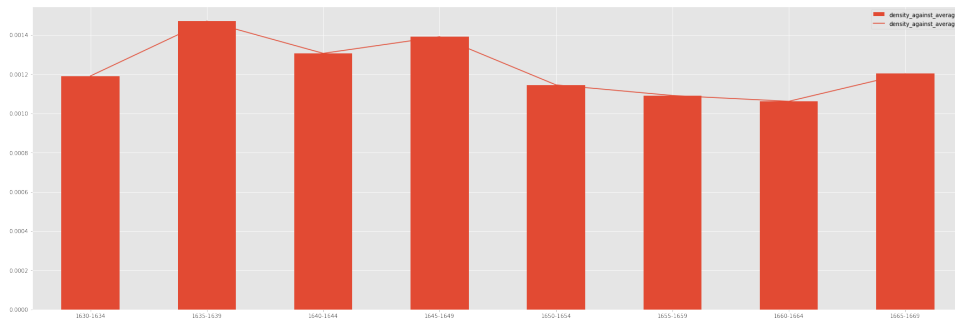


Figure 10: Density of five-year networks (compared to average random networks) during the mid-17th century.

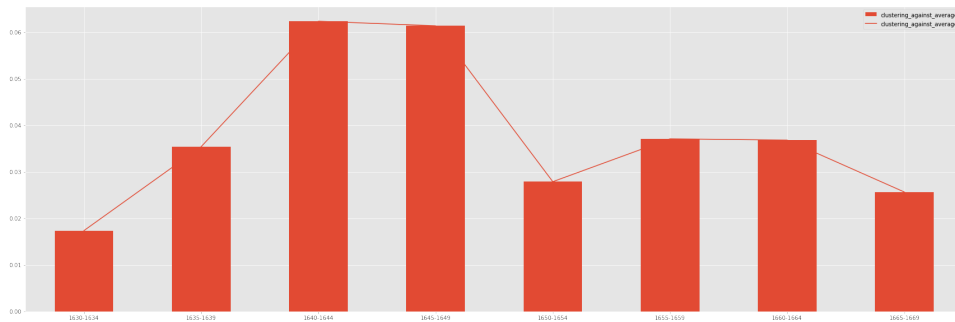


Figure 11: Average clustering coefficient of five-year networks (compared to average random networks during the mid-17th century).

the local density expressed by average clustering coefficient tells a different story. Graphs have significantly higher average clustering coefficients, relative to random graphs of the same size, in the two five-year spans of the 1640s. What shows up as a slight difference in density is much more pronounced in average clustering coefficient. This suggests that the graphs of the Interregnum, at least in its early years, have tighter-knit communities, with the same sets of names appearing together in the same texts more frequently. And while this change takes place during and immediately after the Civil War, it doesn't seem to last: during the Protectorate and the Restoration, density and average clustering coefficient return to pre-war levels.

To explain some of these structural changes, especially the increased density and clustering coefficients of the graph during the early part of the Interregnum, I looked at some of the most prominent names from the graphs of this period. The table in fig. 12 shows the top 20 names by degree for each half decade, with the

degree of the nodes in parentheses.

	1630-1634	1635-1639	1640-1644	1645-1649	1650-1654	1655-1659	1660-1664	1665-1669
0	God (214)	God (174)	God (375)	God (439)	God (420)	God (493)	God (391)	God (145)
1	Jesus Christ (121)	Jesus Christ (90)	Jesus Christ (203)	Jesus Christ (272)	Jesus Christ (267)	Jesus Christ (331)	Jesus Christ (175)	Jesus Christ (70)
2	St Paul (40)	King Charles (36)	St Paul (49)	St Paul (79)	St Paul (74)	St Paul (99)	David (67)	St Paul (17)
3	St John (30)	St Paul (28)	David (49)	David (69)	David (62)	David (97)	St Paul (58)	St John (15)
4	King Charles (27)	St John (21)	Moses (31)	Satan (40)	Satan (57)	St John (71)	Charles II (49)	David (15)
5	David (27)	St Augustine (18)	King Charles (30)	St John (38)	Moses (56)	Satan (70)	Solomon (45)	St Augustine (12)
6	St Augustine (26)	David (18)	Satan (29)	Moses (35)	St John (54)	Solomon (59)	Moses (42)	King James (12)
7	Moses (24)	Solomon (17)	Solomon (29)	Solomon (33)	Solomon (49)	Moses (51)	St John (37)	Solomon (11)
8	Solomon (20)	Moses (15)	St John (29)	King Charles (31)	St Peter (29)	St Peter (41)	Satan (36)	Satan (10)
9	Queen Elizabeth (18)	King James (15)	St Augustine (28)	Thomas Fairfax (28)	St Augustine (28)	Protector (38)	King Charles (35)	Caesar (10)
10	King James (18)	St Thomas (14)	Joshua (26)	St Peter (28)	Lord Will (26)	Jacob (37)	King James (34)	Moses (10)
11	Jacob (17)	Mary (14)	St Peter (23)	Jacob (25)	Job (25)	Job (33)	Caesar (27)	Charles II (10)
12	Satan (16)	Caesar (13)	Jacob (22)	St Augustine (24)	Jacob (23)	Abraham (30)	St Augustine (24)	Jacob (10)
13	Apollo (16)	Alexander (13)	Caesar (22)	Abraham (20)	Abraham (22)	St Augustine (29)	King Henry (23)	St Thomas (9)
14	St Jerome (15)	Satan (11)	Judah (21)	Major (20)	King Henry (21)	Lord Will (27)	Queen Elizabeth (23)	Seneca (8)
15	Mary (15)	Maecenas (11)	Martin Luther (20)	Isaiah (19)	Aristotle (21)	St Luke (27)	Job (22)	Alexander (8)
16	Joseph (14)	Abraham (11)	Lord Will (16)	Joshua (19)	Caesar (21)	Adam (26)	St Peter (21)	King Charles (7)
17	St Thomas (14)	St Peter (11)	Job (14)	Saul (18)	Joshua (19)	Martin Luther (23)	Aaron (20)	Aristotle (7)
18	Job (13)	Joseph (10)	St Chrysostome (13)	Caesar (17)	Plato (18)	Alexander (23)	Alexander (19)	St Luke (7)
19	King Henry (12)	Queen Elizabeth (10)	Saul (13)	Lord Will (17)	Isaiah (16)	St Jerome (22)	St Jerome (17)	Plutarch (7)

Figure 12: Top 20 Names by Degree in Each 5-Year Graph

Observations from these degree rank lists are consistent with assumptions we might make based on historical facts. Names of monarchs, especially Charles but James and Elizabeth as well, have higher rank when there is a monarch on the throne, before 1640 and after 1660. In the 1645-49 graph, the years directly preceding the execution of Charles I, references to “King Charles” drop to number 8, nearly tied with “Thomas Fairfax,” the leader of the Republican forces, at number 9. The lists are sensitive to changes in leadership, which is consistent with my findings about dedicatory practice in the previous section: whether or not an author dedicates their text *to* the leader of the nation, it is likely that leader will be mentioned at some point in the dedicatory epistle. Indeed, in the 1655-59, the final years of the Protectorate, the title “Protector” appears in the top 20 names at number 9, the only time it appears in any of these lists.

But in the Interregnum graphs, monarch names are not simply replaced by Republican leaders. Even Fairfax and Cromwell never achieve the heights in these networks that monarchs do in the 1630s and 1660s. Instead, the networks further consolidate around the already prominent religious figures. Which is to say, the

preferential attachment toward names like “St. Paul,” “St. John,” and “Moses” becomes more pronounced. This may explain why the Interregnum graphs see an increase in density and average clustering coefficient—references to the contemporary political figures fall away somewhat, and references to names of popular religious figures increase as a result. Where the split is more even before and after the Interregnum, the 1640s and 1650s see a moment where dedicatory practice strays even farther from the contemporary and clings to names from the distant past. With the court dissolved and many aristocrats living in exile during this period, such a shift makes sense. The normal social structures that govern dedicatory practice have been upended.

Changes in other names on these lists, which do not correspond directly to changes in leadership, suggest shifts in discourse which also stem from political crises. References to King David are popular across the corpus, as we saw in the previous section, but those references get more central to the graphs during and after the Revolution. The name “David” could signify several things, including increased quotation of and commentary on the Psalms. But it could also connote increasing interest in anointed kingship, taken up by both monarchy’s proponents and its detractors. Indeed, the name David appears most frequently (in 97 texts) in the five-year period leading up to Charles II’s Restoration, and the name has its highest degree rank (third, ahead of Sts. Paul and John, Solomon, Moses, and Charles II himself) in the five-year period immediately following the Restoration. Likewise, while “Satan” is a common name throughout the period, the name has a modest rank of 12th and 14th in the 1630-34 and 1635-39 ranges, respectively. But from 1640 to 1660, “Satan” doesn’t rank lower than 6th. Part of the name “Satan”’s popularity may be the consolidation around popular religious figures in the absence of political ones that I mentioned above. But it is notable that Satan in particular rises in degree rank, as opposed to Moses, Abraham, or Augustine. This indicates that a particular kind of religious language, perhaps of an apocalyptic flavor, has taken hold during the period, and it will also no doubt intrigue Milton scholars to know of Satan’s increasing centrality in the years leading up to the publication of *Paradise Lost*.

The dedication networks of the mid-seventeenth century change in both shape—the structure of the graph—and character—the kinds of names that are being mentioned. Though most of the most central names are from the distant past, the network changes in response to political events. During the Interregnum, with the monarchy and aristocracy significantly reduced, the network further consolidates around popular religious and biblical figures rather than attaching to many individual Republic and Protectorate officials.³² But this shift even further away from the contemporary still suggests a discourse of dedications that is responsive to contemporary politics, as the increased use of names like “David” and “Satan” suggest themes that would have been on the minds of authors of the 1640s and 50s.

Broadening the networks of early modern dedications to include the names within the body of the dedicatory epistle shows the importance of non-contemporary names to an author’s framing of their work with respect to dedicatory practice. As William St. Clair reoriented our understanding of reception by showing that reading was centered not simply on current publication but around a library of books from the recent and the distant past; so these networks suggest that the imaginative worlds of early modern print, manifest in dedications, are constituted of figures from a long history and not just the patrons and politicians of the day. And though the networks are filled with non-contemporary names, because the dedication is a genre invested in how a work will be perceived by its potential patron and by other readers, the networks change noticeably in response to current events. Indeed, during the mid-seventeenth century period of political crisis and revolution, dedicatory practice changes markedly as a result of shifts in social structure and political discourse. In terms of dedicatory practice, the networks of the 1640s and 1650s were radically different from what came before and after. While we could certainly see those changes in terms of authors and patrons alone, casting a wider net for names produces networks sensitive to discursive shifts as well as social ones.

Notes

¹Samuel Hartlib, *A Description of the Famous Kingdome of Macaria* (London, England), A2r–A2v, accessed April 29, 2020, <http://search.proquest.com/eebo/docview/2248511257/citation/65731BA7BC8348E9PQ/1>.

²Samuel Drake, *Totum Hominis, or, the Decalogue in Three Words, Viz. Justice, Mercy and Humility* (London, England), A2r–A2v, accessed April 29, 2020, <http://search.proquest.com/eebo/docview/2264225388/citation/ACCBCEC2CFD74660PQ/1>.

³See Helen Smith and Louise Wilson, *Renaissance Paratexts* (Cambridge: Cambridge UP, 2011), James Daybell and Peter Hinds, eds., *Material Readings of Early Modern Culture: Texts and Social Practices, 1580-1730*, Early Modern Literature in History (New York: Palgrave Macmillan, 2010), and Elizabeth Sauer, 'Paper-Contestations' and Textual Communities in England, 1640-1675, *Studies in Book and Print Culture* (Toronto: U of Toronto P, 2005).

⁴Andie Silva's new book *The Brand of Print*, which explores the role of paratexts in the marketing of books is especially salient here, as well as Seth Lerer's essay on errata sheets in *Reading, Society, and Politics in Early Modern England*, and Ann Blair's work on managing scholarly information in indices and tables of content. See Andie Silva, *The Brand of Print: Marketing Paratexts in the Early English Book Trade* (Brill, 2020), <https://brill.com/view/title/55831>, Kevin Sharpe and Steven N. Zwickler, *Reading, Society and Politics in Early Modern England* (Cambridge: Cambridge UP, 1999), and Ann Blair, *Too Much to Know: Managing Scholarly Information Before the Modern Age* (New Haven: Yale UP, 2010).

⁵In a new project at the Folger Shakespeare Library, Heidi Craig and Sonia Massai are working at the forefront of digital paratexts in drama, for example, as they digitize and extend Berger and Massai's *Paratexts in English Printed Drama to 1642*. See Thomas L. Berger, Sonia Massai, and Tania Demetriou, eds., *Paratexts in English Printed Drama to 1642* (New York: Cambridge University Press, 2014). And further on in this essay I discuss Michael Gavin's use of paratexts in his Historical Text Networks.

⁶Ruth Ahnert and Sebastian E. Ahnert, "Metadata, Surveillance and the Tudor State," *History Workshop Journal* 87 (April 2019): 1, doi:10.1093/hwj/dby033.

⁷Ibid., 1–3.

⁸Blaine Greteman, "Shakeosphere," *University of Iowa Libraries*, accessed February 28, 2018, <https://shakeosphere.lib.uiowa.edu/>.

⁹Christopher N. Warren et al., "Six Degrees of Francis Bacon: A Statistical Method for Reconstructing Large Historical Social Networks," *Digital Humanities Quarterly* 10, no. 3 (2016), <http://digitalhumanities.org/dhq/vol/10/3/000244/000244.html>.

¹⁰"A Bird's Eye View of Early Modern Latin: Distant Reading, Network Analysis, and Style Variation," in *Early Modern Studies After the Digital Turn*, ed. Laura Estill, Diane K. Jakacki, and Michael Ulliot, *Medieval & Renaissance Texts & Studies (Series)* ; V. 502 (Tempe, Arizona: Arizona Center for Medieval; Renaissance

Studies, 2016), 61–88.

¹¹Though this is the main one to use network analysis, all of the essays in this volume provide excellent examples of the use of metadata and data in concert to produce insights for early modern studies. See Laura Estill, Diane K. Jakacki, and Michael Ulliyot, eds., *Early Modern Studies After the Digital Turn*, Medieval & Renaissance Texts & Studies (Series) ; V. 502 (Tempe, Arizona: Arizona Center for Medieval; Renaissance Studies, 2016).

¹²“Historical Text Networks: The Sociology of Early English Criticism,” *Eighteenth-Century Studies* 50, no. 1 (October 2016): 53–80, doi:10.1353/ecs.2016.0041.

¹³Gérard Genette, *Paratexts: Thresholds of Interpretation*, Literature, Culture, Theory 20 (Cambridge ; New York, NY, USA: Cambridge University Press, 1997), 123.

¹⁴Ibid., 124.

¹⁵*Literary Patronage in England, 1650-1800* (Cambridge: Cambridge UP, 1996).

¹⁶*The Invention of English Criticism, 1650-1760* (Cambridge: Cambridge UP, 2015).

¹⁷Unfortunately, though it’s possible to know when a name in the body is the name of a dedicatee, if there is a name in the header that is *not* of a dedicatee (as is true of Lord Armitage in the Drake example above), it’s difficult to differentiate that name from the names of the dedicatee(s) that appear alongside it.

¹⁸The markup for dedications is not infallible, but it is quite accurate. In my review of 100 random *EarlyPrint* XML documents, 50 that contained dedications in my resulting dataset and 50 that did not, the dedication markup was correct in all but 2 documents. There were only two addresses to the reader (in the same document) that were incorrectly labeled as dedications, and just one dedication was not labeled as such. This 98% accuracy rate suggests that my extraction of dedications by type attribute captures the vast majority of available dedications in the *EarlyPrint* corpus.

¹⁹“spaCy · Industrial-Strength Natural Language Processing in Python,” accessed August 27, 2020, <https://spacy.io/>.

²⁰Philip R. Burns, “MorphAdorner,” August 2013, <http://morphadorner.northwestern.edu/morphadorner/>.

²¹I was able to eliminate some of the false positives (which account for the lower precision score) through hand-curation at a later stage of the process.

²²“Historical Text Networks.”

²³Unspecified references to “King Charles” could just as easily refer to Charles II or his executed father, Charles I. See my comment on this ambiguity in the previous section.

²⁴Duncan J. Watts and Steven H. Strogatz, “Collective Dynamics of ‘Small-World’ Networks,” *Nature* 393, no. 6684 (June 1998): 440–42, doi:10.1038/30918.

²⁵Because graph-wide metrics like density are highly dependent on a graph’s size, you can’t directly compare

density measures for two graphs of the same size. Instead, best practice is to generate random graphs of similar size, and compare the network to the average metrics of those graphs. I've done that here by generated two 10-graph samples similar in size to the full 1660 graph and the header/signature 1660 graph, respectively, using NetworkX's bipartite preferential attachment model.

²⁶Degree centrality in the headers and signatures alone is strongly but not perfectly correlated with degree centrality in the network taken from the full dedication ($r=.674$). Though degree centrality in the full network is similar to that in the header/signature only network for nodes that appear in both, there are only 444 names in the header/signature network compared to 1271 names in the full 1660 network. Though many of these nodes are low degree, they represent a large amount of information about naming that is added by looking at names beyond the header and signature alone. And a few are quite high in degree: the biblical king David, for instance, has a degree of 26 and a strength of 57 in the full 1660 graph, making his the third most frequent name overall. But his name only appears in the body of dedications, never in the header or signature.

²⁷"Living people" includes anyone who lived during the early modern period, roughly 1500-1700, i.e. it includes more than simply people alive in 1660 and encompasses both the living and what we might call the "recent past." "Religious/biblical" includes deity names (God, Jesus) and saints and other figures that appear in the bible (Peter, Moses). (Phrases like "Grace of God" and "God willing" were filtered out at an earlier stage of the process.) Saints who do not appear in the bible but were real historical people (who usually wrote texts being cited in a dedication) appear alongside Greek and Roman philosophers and political leaders, as well as anyone who lived before ~1500, in the "historical people" category (Augustine, Anselm, Cicero, Tertullian, etc.). "Fictional characters" includes mythological figures (Athena, Apollo) alongside characters from literary works. Any names that could not be identified with a reasonable degree of certainty were labeled with a U.

²⁸This is nearly identical to document frequency/term frequency ratios commonly used in text analysis.

²⁹This table includes one item, "Democracy," which is clearly not a personal name. I eliminated the majority of the highest frequency mistakes in name detection during hand curation, but a small number of low-frequency names/terms like this remain in the data. Eliminating the rest of these low-frequency occurrences would take a great deal of time and wouldn't change the overall trends in the data very much. They are infrequent, and I do not believe that they skew the overall trends in the networks. I remain satisfied by the precision and recall scores I cited in the last section, which are consistent with state-of-the-art named-entity recognition.

³⁰William St. Clair provides the now classic explanation of this phenomenon. See William St. Clair, *The Reading Nation in the Romantic Period* (Cambridge: Cambridge UP, 2004).

³¹You can observe this spike in the count of texts available at *EarlyPrint*: https://earlyprint.org/lab/tool_eebo_estc_texts.html.

³²This study focuses on individual personal names rather than collective names. There are dedications to Parliament throughout the period, and it could be useful to track how mentions of Parliament and other organizations changes during this period. But such inquiry is outside the scope of this essay.